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Remarks/Arguments

In response to the Rejection mailed February 18, 2004, Applicants have canceled claims 1-15, 19-21 and 25-80, amended claims 16, 18 and 23, added new claims 81-87 and present the following remarks.

Claim 16 was objected to as being dependant on a non-elected claim. Claim 16 has been amended to overcome this objection.

Claims 16-18 and 22 were rejected under 35 USC 112, second paragraph as being indefinite. Specifically claim 16 was cited as lacking antecedent basis. Claim 16 was amended to overcome this rejection. Claim 16 was also rejected as allegedly incomplete for omitting essential steps. While not agreed with, claim 16 was also amended in a manner that overcomes this rejection. Claim 20 was cited as indefinite for reciting an array whereas claim 16 allegedly does not teach preparing an array. While this is incorrect, the present amendments to claim 16 also overcome this rejection.

Claims 16, 17, 22 and 23 were rejected under 35 USC 102(e) as being anticipated by Wach et al. The examiner contends that cutting the optical fiber and attaching it to a gradient optical element or thin PTFE plate anticipates the claims. This rejection is respectfully traversed.

Claim 16 recite a different type of fiber in the "bundle". The claims require at least two different binding partners or agents of interest to be immobilized on different fibers in the "bundle". The taught optical fibers do not have this feature. Also, even if mounted, such a device does not appear to be an "array" with differences between different fibers.

Wach et al does not disclose making a section and certainly not a thin one. In every passage cited by the examiner, the optical fiber is still a very long fiber. The "cutting" referred to by Wach et al is at the end of the fiber. It does not make a section with cutting on both sides of the section.

Still further, the section is never mounted on a solid support. The passages cited by the examiner refer to a fiber being placed through a hole in a support plate. A section is not

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on top of the support plate. Accordingly, this rejection should be withdrawn.

Claims 16-18, 22-24 were rejected under 35 USC 102(e) as being anticipated by Landegren et al. The rejection considers the stacking and fixing together of flat thin carrier elements, sectioning and depositing them to anticipate the claims. The sectioning is noted to be "salami-like". This rejection is respectfully traversed.

Initially, it should be noted that the present invention envisions a fixed array where each array cell is in a predetermined location and all of the arrays are the same. This is unlike salami where meat and adipose tissues are randomly distributed and where different slices may be different.

The present claims have been amended and at least four different recitations are neither disclosed nor suggested by Landegren et al. Also, the examiner apparently considers a "stack" of sheets in Landegren et al and the claimed "bundle" of fibers to be the same, probably because Landegren et al happens to mention the word "bundled" (column 3, line 45 and other locations). Strictly speaking, these are different and this difference is reflected in the claims and also in the different attributes which are also reflected in the at least four differences.

Firstly, Landegren et al cut sections of 100 microns thick. See column 5, line 6. Claims 16 and 22 recite sections less than 50 microns thick. Claims 18 and 24 recite sections less than 20 microns thick. Claims 81 and 23 recite sections less than 10 microns thick. Applicants have found that thinner sections are actually superior to thicker sections because of less background and more than adequate agent of interest being present. Note the present specification, Example 2, where the sections were 5-20 microns thick, Example 4, where the sections were 5-100 microns thick and Example 14 where the sections were 10 microns thick. Landegren et al does not contemplate such thin sections, in part because they stack membranes held together by double-sided tape, a rather weak structure.

Secondly, Landegren et al cuts everything transversely. This is emphasized by the stacking of the sections and the "salami-like" slices of column 2, line 35. Claims 82 and 83 recite cutting at an "angle" and not the language of the other claims of cutting "transversely

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or at an angle". The intent of this language in these two claims is to exclude transverse sectioning. Applicants have found that cutting at an angle offers certain advantages not contemplated by Landegren et al. For example, when the agent of interest is immobilized on the outside of the fiber and it is sectioned transversely, one visualizes a ring when imaging from above or below the array. When the section is taken at an angle, e.g. 45°, one can partially image the side of the fiber as well as the ring, which appears to be filled in. This allows for an easier reading of the array.

Thirdly, Landegren et al immobilizes molecules to their membranes by chemical cross-linking and lists several different ones in column 4, lines 17-24. Claims 84 and 85 recite biological cells and microorganisms immobilized in the fibers. These are living cells and microorganisms, not molecules. Further, the harsh chemicals and solvents used to cross-link molecules may be fatal to these cells and microorganisms and harm the usefulness of the final array (or even make it worthless). Therefore, Landegren et al did not contemplate the claimed type of microarray.

Fourthly, Landegren et al never suggests making an array where different fibers in the section contain different concentrations of the same molecule. There is no motivation in Landegren et al to do this for a number of reasons. Landegren et al states their arrays can be used for at least 9 different applications listed in column 4, lines 25-43. All of these uses are qualitative tests. None are quantitative assays. Landegren et al has not shown that they can control the amount of immobilized molecule in their array. Indeed, Landegren et al never actually demonstrated that the final array even contained their molecules, much less that they could be assayed in any type of quantitative manner. Therefore, Landegren et al offered no suggestion to create an array with different fibers containing different concentrations of the same agent of interest, which would have little use other than for a quantitative analysis.

Applicants have shown structural differences and corresponding functional differences with the claimed invention in the fiber bundle being cut and the resulting array. Accordingly, this rejection should also be withdrawn.

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In view of the amendments and comments above, the rejections have been overcome. Reconsideration, withdrawal of the rejections and early indication of allowance are respectfully requested. If any issues remain, the examiner is encouraged to telephone the undersigned.

If needed, applicants petition for an extension of time under the provisions of 37 CFR 1.136(a) for sufficient time to accept this response. The commissioner hereby is authorized to charge payment of any fees under 37 CFR § 1.17, which may become due in connection with the instant application or credit any overpayment to Deposit Account No.500933.

Respectfully submitted,



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